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The time period for reply, if any, is set in the attached communication.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/772,699

Filing Date: February 05, 2004

Appellant(s): EDWARDS ET AL.

Anna M. Budde
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/30/10 appealing from the Office action
mailed 3/23/10.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 1-5, 7, 9, 11-13, 15, 18, and 20 are pending in this application and stand finally rejected. Claims 6, 8, 14, 16, and 19 are cancelled. This appeal is over claims 1-5, 7, 9, 11-13, 15, 18, and 20.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being

maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

Due to appellant's new arguments regarding common ownership under 35 USC 103(c) presented for the first time after more than a year of prosecution, the two references, US 2005/0058861 (Pettit) and US 2005/0106438 (Hobmeyr), are withdrawn from the rejections. As these two references were part of each of the rejections presented, the rejections of record are not appropriate and therefore withdrawn. However, in reply to the new evidence and arguments presented in the appeal brief, a new rejection is presented that uses prior art already of record and is presented for replacing the teachings of Pettit.

NEW GROUND(S) OF REJECTION

Claims 1-5, 7, 9, 11-13, 15, 18 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0160245 (Genc) in view of US 2002/0114984 (Edlund) and US 5,623,390 (Noda) as evidenced by US 6,416,892 (Breault).

Genc teaches a fuel cell system with a hydrogen flow path for the anode and a coolant flow path for the fuel cell. The cooling flow path includes a coolant reservoir that

has a first enclosure. A passive gas vent is located in the coolant flow path and vents gas from the first enclosure without any electrical devices or active components (Abstract, Figs. 1 & 2, [0007, 0010, 0019]). The gas vent, located in the wall of the coolant reservoir, is a porous material made of plastic or metal and enables the passage of gas but not liquid (Figs. 3-6; [0021-0023, 0031]). Hydrogen gas is known in the art as one of the gases that can build up in a cooling system. This is evidenced by Breault (3:5-18, 14:20-37). Since Genc teaches venting all gases from the cooling liquid through the passive vent and hydrogen is known to be part of the gas in the cooling fluid, the passive vent taught by Genc is a passive hydrogen vent. Using this selectively permeable membrane keeps the fuel cell system operating properly by reducing the unwanted gases that negatively impact the fuel cell, while still retaining the wanted liquid coolant, as evidenced by Breault (14:20-38). Genc teaches the fuel cell comprises a second enclosure, a fuel cell cabinet, which is around the fuel cell ([0004]). As the fuel cell requires hydrogen to operate, the second enclosure encompasses at least a part of the hydrogen flow path.

Genc is silent to maintaining the hydrogen concentration below 4 percent or below 1 percent.

Noda teaches a nickel-hydrogen battery. Like the electrochemical fuel cell, the electrochemical device of Noda also is associated with hydrogen. Hydrogen gas can be expelled by the battery and since the battery has an enclosure and the battery is enclosed by another device, the build up of hydrogen gas within the enclosure becomes unsafe due to the explosive nature of hydrogen (Abstract). Therefore, hydrogen vents

are used to pass the hydrogen gas out of the battery enclosure (46, 47) and then out of the body case enclosure (50, 51) (Fig. 11; 9:5-25). The concentration of hydrogen gas is kept to below 4 percent and preferable below 3 percent to prevent the enclosure from reaching an explosive concentration of hydrogen (9:37-40). While Noda doesn't explicitly teach a hydrogen concentration below 1%, the range taught is directed to a hydrogen concentration less than 3%, which includes and points to a hydrogen concentration of less than 1%. Claims that differ from the prior art only by slightly different ranges are *prima facie* obvious without a showing that the claimed range achieves unexpected results relative to the prior art (MPEP 2144.05). Furthermore, it would be obvious to one of ordinary skill in the art, based on the teachings of Noda, to limit the hydrogen concentration to less than 1% to ensure a safe operating environment.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the vent and both enclosures of Genc with the teachings and hydrogen vent of Noda to keep the concentration of hydrogen gas within any of the enclosures to less than 3%, thereby preventing an explosive situation. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Genc is silent to a third enclosure with a passive hydrogen vent.

Edlund teaches a fuel cell system that is contained inside a housing (140), which is further contained within another housing (142) (Abstract, Fig. 11; [0062-0064]). The

housing allows for easy the integration of the complete fuel cell system into an electric dependent device.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the fuel cell system of Genc with third and fourth enclosure housings of Edlund to allow for easy integration of the fuel cell into electric devices. The addition of multiple enclosures is illustrated by Edlund as known in the art and the instant specification shows no unexpected or synergistic effect to the multiple enclosures.

While Edlund is silent to providing a vent in each of the housings, it would be obvious to one skilled in the art to vent each of the housings with the passive vent taught by Genc to prevent the build up of hydrogen gas such that it would create an unsafe and explosive situation. Furthermore, this concept of preventing a build-up of explosive gas is known to one of ordinary skill in the art as illustrated by the teachings of Noda discussed above. Hydrogen vents are included in the battery case enclosure and then since the battery case is enclosed within another case, the case enclosure is also provided with hydrogen vents to prevent a hydrogen build-up within the second enclosure. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Claims 10 & 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0160245 (Genc) in view of US 2002/0114984 (Edlund) and US 5,623,390

(Noda) as evidenced by US 6,416,892 (Breault) as applied to claims 1 & 11 and further in view of US 4,168,349 (Buzzelli).

The teachings of Genc, Edlund, Noda and Breault as discussed above are incorporated herein.

Genc is silent to the vent configured as a flame barrier.

Buzzelli teaches a hydrogen vent that acts as a flame and explosion barrier (2:55-65). Using a hydrogen vent that also blocks flames increases the safety of the fuel cell system.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the vent of Genc with the flame barrier vent of Buzzelli to improve the safety of the fuel cell device.

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

2002/0160245	Genc	10-2002
2002/0114984	Edlund et al.	8-2002
5,623,390	Noda et al.	4-1997
6,416,892	Breault	7-2002
4,168,349	Buzzelli	9-1979
2002/0164512	Grasso	11-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The rejections listed above under the heading "NEW GROUNDS OF REJECTIONS", are applicable here and for brevity are not re-iterated here.

(10) Response to Argument

Due to appellant's introduction of new arguments in the Appeal Brief concerning the Pettit and Hobmeyr references, new grounds of rejections were necessary. Therefore, the arguments presented by appellant are now moot and so the response to the arguments would be moot.

However, in an effort to create as complete an Examiner's Answer as possible, a response to the individual references that are still applicable will be discussed.

Regarding the Genc reference, appellant argues the Genc system is only concerned with releasing "mainly air" from the cooling system to maintain the efficient and proper coolant circulation. Appellant goes on to argue that since Genc teaches only preventing a build up of gases that would adversely affect coolant circulation and heat exchange, there is no reason to modify the Genc system to achieve a particular hydrogen concentration in a particular enclosure.

First, the hydrogen vent of the instant claims is not required to only vent hydrogen gas but is inclusive of venting any and all gases. As the gas that is "mainly air" comprises hydrogen, the vent taught by Genc meets the limitation of a hydrogen vent. Second, as discussed in the rejection above, hydrogen gas and other gases are

known to one of ordinary skill in the art to be accumulated in the cooling system. This gas can negatively affect the operation of the fuel cell. So, venting the gases as taught by Genc would rid the cooling system of the accumulated gases, as taught by Breault. Third, as hydrogen is one of the gases that is entrained in the cooling system, to prevent an explosive situation, the concentration of the hydrogen gas should be kept below 4%, as taught by Noda. Therefore, the references teach multiple reasons for venting the hydrogen gas from the cooling fluid enclosures and as well as other enclosures.

Further evidence of gases such as hydrogen accumulating in the cooling system is provided by US 2002/0164512 (Grasso). Grasso also teaches that gases such as hydrogen are entrained in the cooling system ([0006]).

Regarding the teachings of Edlund, appellant argues that no reasoning is provided for venting the enclosures taught by Edlund. Noda teaches the build-up of hydrogen gas beyond 4% creates an unsafe and explosive situation. If multiple enclosures are used, preventing the hydrogen from building up in the first enclosure by venting the hydrogen gas to a second enclosure does not relieve the explosive situation if the second enclosure is also not vented. This concept is taught by Noda. Furthermore, since the Noda teaches the concept of preventing a build-up of hydrogen in an enclosure by venting the enclosure and Edlund teaches the concept of using multiple enclosures, it would be obvious to one of ordinary skill in the art to relate the two concepts and place vents in each of the enclosures to prevent a build-up of hydrogen in any of the enclosures.

As illustrated above, appellant's claimed invention is well known in the art and for the reasons of record obvious to one of ordinary skill in the art.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section (9) above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) Reopen prosecution. Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) Maintain appeal. Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be

treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

/Keith Walker/

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700

Conferees:

Pat Ryan

/Patrick Joseph Ryan/

Supervisory Patent Examiner, Art Unit 1795

/Gregory L Mills/

Supervisory Patent Examiner, Art Unit 1700

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